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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,642	08/24/2006	Ryouichi Takayama	MAT-8876US	1497
52473	7590	01/30/2009		
RATNERPRESTIA P.O. BOX 980 VALLEY FORGE, PA 19482			EXAMINER GORDON, BRYAN P	
			ART UNIT 2834	PAPER NUMBER
			MAIL DATE 01/30/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,642	<b>Applicant(s)</b> TAKAYAMA ET AL.	
	<b>Examiner</b> BRYAN P. GORDON	<b>Art Unit</b> 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/30/08 has been entered.

### ***Drawings***

1. The drawings were received on 30 December 2008. These drawings are accepted.

### ***Specification***

2. The changes to the specifications were received on 30 December 2008. The changes to the specification are accepted.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asai (US PN 4,449,107), in view of Natatani (US PN, 6,798,121) and in view of Matsuoka (US PN 6,589,215).

6. Considering claim 1, Asai (Figure 16) teaches a piezoelectric substrate (5); a comb-shaped electrode (6) formed on a first principal face of the piezoelectric substrate; and a supporting substrate (4A) bonded to a second principal face of the piezoelectric substrate, wherein the second principal face of the piezoelectric substrate is bonded to the supporting substrate at room temperature via a metal layer (15) absent heating the piezoelectric substrate and the supporting structure.

However, Asai does not teach a heat dissipating layer bonded to the second surface of the supporting substrate, the supporting substrate includes a through-hole and an electric conductor provided inside the through-hole, and the electric conductor is electrically coupled to the metal layer and the electric conductor, the metal layer and the heat dissipating layer are electrically connected.

In the same field of endeavor, Natatani teaches a heat dissipating layer bonded to the second surface of the supporting substrate (paragraph 0028) a through-hole and

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electric conductor provided inside the through-hole for the benefit of connecting the electrodes together to power the device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a through-hole and electric conductor provided inside the through-hole with Asai's device for the benefit described above.

In the same field of endeavor, Matsuoka (Figure 5E) teaches the electric conductor (4), the metal layer (9) and the heat dissipating layer (10) are electrically connected for the benefit of operating the device.

7. Considering claim 3, Nakatani teaches the metal layer is removed the metal in part (metal layer shaped into a stripped or meshed pattern, col. 1 lines 62-67).

8. Considering claim 5, Asai teaches the supporting substrate employs a substrate made of sapphire (col. 9 lines 10-12).

9. Considering claim 6, Asai discloses the claimed invention except for the metal layer employing gold. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use gold for the metal layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asai (US PN 4,449,107), in view of Natatani (US PN, 6,798,121), in view of Matsuoka (US PN 6,589,215) and in view of Onishi (US PN 6,426,583).

11. Considering claim 4, the combination above does not teach the substrate employs rotated Y-cut lithium tantalate.

In the same field of endeavor, Onishi teaches the substrate employs rotated Y-cut lithium tantalate (col. 1 lines 40-44). It is well known in the art that SAW devices comprises Y-cut substrates and therefore it would have been obvious to combine Onishi Y-cut substrate with the combination above.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asai (US PN 4,449,107), in view of Kim (PG Pub 20040232843).

13. Considering claim 13, Asai teaches the claimed invention as described above, except for the first metal having a striped pattern or a meshed pattern and a second metal layer formed on the supporting substrate and the striped pattern or the meshed pattern extending at an angle away from perpendicular relative to an extension direction of the comb-shaped electrode.

In the same field of endeavor, Kim (Figure 5) teaches the first metal (121a) having a striped pattern or a meshed pattern and a second metal layer (122a) formed on the supporting substrate (123) for the benefit of not having an excessive load voltage to the device which could damage the device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include first metal having a striped pattern or a meshed pattern and a second metal layer formed on the supporting substrate with Asai's device for the benefit described above.

Kim teaches the stripe shaped pattern. It would have been obvious to substitute the metallic layer (Figure 5, 15) of Asai with striped shaped pattern (Figure 5, 121a) of

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Kim for the benefit of being able to connect the metal layer with the substrate through the stripe openings.

### ***Response to Arguments***

14. Applicant's arguments filed 30 December 2008 have been fully considered but they are not persuasive. Regarding the applicants' arguments that Nakatani (Figure 7) does not teach a through-hole (611) in the supporting substrate, Nakatani does teach the limitation as claimed even though the through-hole goes through a circuit board (607). The supporting substrate is a substrate that supports the surface acoustic wave device. The circuit board does support the surface acoustic wave device (601) indirectly through the metal bumps (605) and wiring pattern (609). Therefore, this limitation is taught by Nakatani.

### ***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN P. GORDON whose telephone number is (571)272-5394. The examiner can normally be reached on Monday-Thursday 8:00-5:30, Friday 7:30-4:00.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on 571-272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen P Leung/  
Supervisory Patent Examiner, Art Unit 2834

/B. P. G./  
Examiner, Art Unit 2834